

Patent claims

1. A method for preparing enantiomerically pure R- α -lipoic acid, which is characterized in that a cell having an attenuated lipoyl protein ligase A activity is cultured in a culture medium, said cell secreting enantiomerically pure R- α -lipoic acid in free form into said culture medium and said enantiomerically pure R- α -lipoic acid being removed from said culture medium.
- 10 2. A cell secreting enantiomerically pure R- α -lipoic acid into a culture medium and having an attenuated lipoyl protein ligase A activity, characterized in that it has, instead of a wild-type *lplA* gene, an *lplA* allele which has, in the base pair range 367-465, a base substitution which results in the *LplA* protein activity being reduced by at least 50%, or having a deletion in the *lplA* gene.
- 15 3. The cell as claimed in claim 2, characterized in that any *LplA* protein activity is no longer detectable.
- 20 4. The cell as claimed in claim 2 or 3, characterized in that it has an increased lipoic acid synthase activity or an increased lipoyl protein ligase B activity.
- 25 5. The cell as claimed in claim 2, 3 or 4, characterized in that it is a microorganism such as, for example, a yeast or bacterial strain.
- 30 6. The cell as claimed in claim 5, characterized in that the bacterial strain is of the family Enterobacteriaceae, preferably the species *Escherichia coli*.
- 35 7. The method as claimed in claim 1, characterized in that a cell as claimed in one or more of claims 2 to 6 is used as the cell which has an attenuated lipoyl protein ligase A activity.

8. The method as claimed in claim 1 or 7, characterized in that the enantiomerically pure R- α -lipoic acid is removed by centrifugation of the cell-containing culture medium and subsequent extraction or precipitation of the R- α -lipoic acid from the cell-free culture medium.
9. The method as claimed in any of claims 1, 7 and 8, characterized in that the carbon source used in the culture medium is selected from the group of usable sugars, sugar alcohols or organic acids.
10. The method as claimed in any of claims 1 and 7 to 9, characterized in that fatty acids having a chain length of C2-C8, preferably having a chain length of C6-C8 (hexanoic and octanoic acid, respectively), are added to the culture medium.
11. The method as claimed in claim 9 or 10, characterized in that the carbon source is used in a concentration of 0.1-30 g/l.
12. The method as claimed in any of claims 1 and 7 to 11, characterized in that the cells are incubated within the range of the optimum growth temperature for the particular cells over a period of 16-150 h.